2022-06-07 MBK Baker Lake TSS

GN reference #: 2022-236

Please find the following information as a follow up to the spill report, #2022-236, submitted June 7, 2022 by Agnico Eagle Meadowbank division. This detailed report is submitted to the Inspector in compliance with the conditions under the Nunavut Water Board License 2AM-MEA1530, Part H, Item 8c and subsection 38(7) of the fisheries act.

Description

During an inspection of the Baker Lake Marshalling Facilities by an environmental technician, two turbid flows of water were observed entering into the thawed shore of Baker Lake, creating apparent plumes of TSS along the shore. The flows of water appeared to flow through the Agnico Eagle facilities, where heavy equipment were travelling to prepare the area for the upcoming maritime shipping season. The visible plumes in Baker Lake were mostly contained within a few feet from the shoreline, and water appeared clear a few meters into the lake. The two plumes are hereafter referred to as "BL-BARGE" for the flow of water that entered on the West side of the dock (64°18'17.68" N, 95°57'11.11" W), and "BL-LAKE" for the flow of water further West (64°18'20.23" N, 95°57'22.77"W). See figure 1 below for general site layout information and flow path estimate.

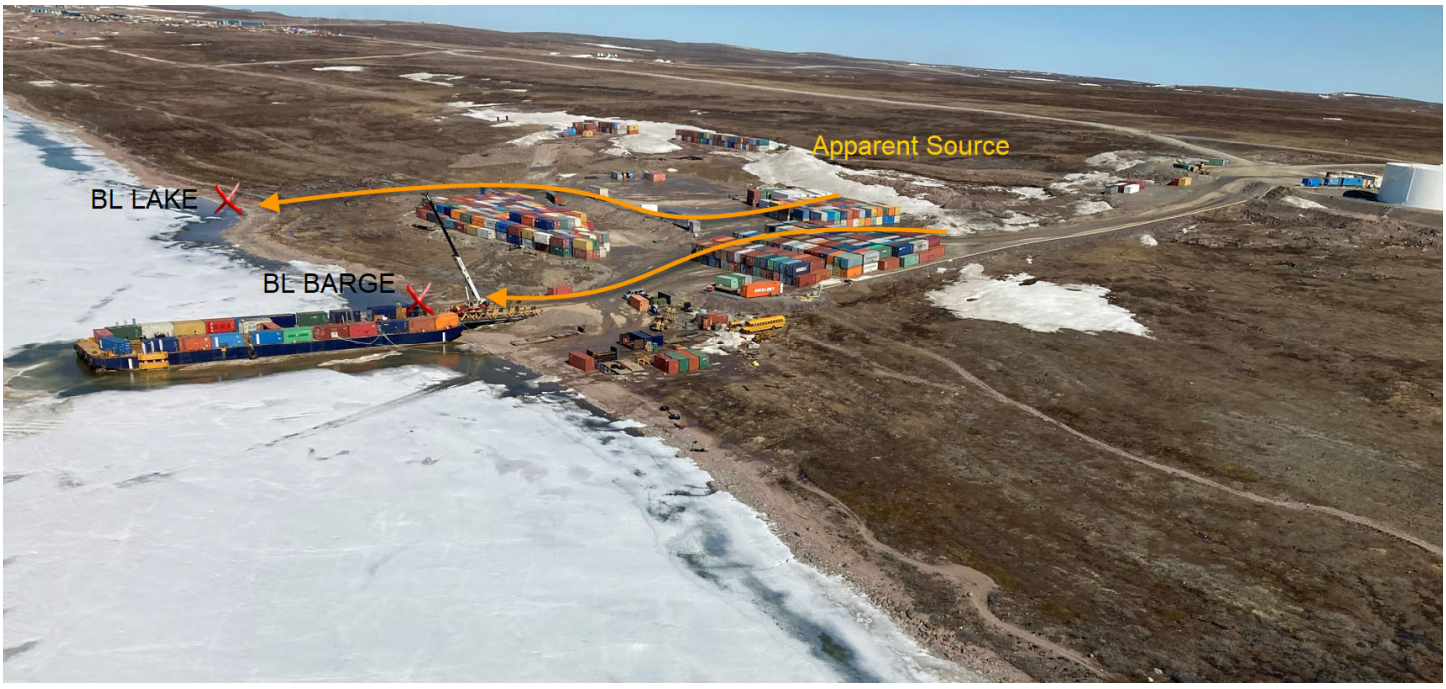

Figure 1. Overall Layout - Aerial Picture (2022/06/07)

Water samples in the lake of both locations were taken for analysis for TSS, as well as for acute lethality to *Daphnia Magna* and *Rainbow Trout*. The lethality samples were collected on June 8th, however due to the timing of the event and the logistics of shipment for analysis to an accredited third-party laboratory, they were processed outside of hold time. The analysis demonstrated the sampled water to be non-lethal to both species. The results for TSS samples taken in the lake are presented in Table 1 below.

Tpable 1. TSS Results of Baker Lake Samples

Date	BL BARGE TSS (mg/L)	BL LAKE TSS (mg/L)
2022/06/08	5	110
2022/06/09	60	280
2022/06/10	4	17
2022/06/11	2	3
2022/06/12	20	4
2022/06/14	2	2
2022/06/15	15	5

Figure 2. Aerial view of Baker Lake Shore prior to deployment of maritime booms (2022/06/07)

Location: 64° 18'20" 95° 57'23". The impacted waterbody is Baker Lake.

Cause

The identified cause for the turbid runoff is the large volume of water reporting through the Marshalling Facilities without sufficient control measures in place. The volume of water flows through exposed till material, from which sediments are transported towards the lake. Furthermore, poor snow management practices during the winter of 2021-2022 allowed for little room for sedimentation to occur in the runoff water.

Remediation Actions

Upon observation of the runoff into the lake, the environmental personnel deployed maritime curtains, woodchip-log or straw-log booms and silt fence in the flow path of the runoff, to control the transportation of sediments. Over the next week, daily inspections and monitoring of the sector was performed by environmental staff. During the monitoring, the TSS control measures were monitored, repaired and added, if needed. Samples of the water quality (total suspended solids) of the lake at both inflow locations were taken, as described in Table 1. Acute Lethality sample results are pending final analysis. As part of the Core Receiving Environmental Monitoring Program, water chemistry monitoring will occur in Baker Lake.

Figure 3. Mitigation Measures at BL-LAKE (2022/06/07)

Figure 4. Mitigation Measures at BL-BARGE (2022/06/07)

Figure 5. Contained turbidity & sediments at BL-BARGE (2022/06/10)

Figure 6. BL-LAKE (2022/06/30)

Figure 7. BL-BARGE (2022/06/30)

From Figure 4, it is possible to see the effectiveness of the barriers to contain the turbidity in a localized area. The lakebed can also be seen to have apparent additional sediments. From figures 6 and 7, it is possible to see the effectiveness of the measures as of June 30th, with little to no water reporting to the lake. The area will require close monitoring following each rain events.

Corrective Measures

A contractor was retained to compact and address the problematic exposed till material. This work is scheduled to take place during the week of July 11th, 2022.

An engineering firm was retained to propose long-term solutions for water management at the Baker Lake Marshalling Facilities. Proposed solutions will be evaluated and discussed with CIRNAC prior to implementation.

Lastly, snow management of the sector will be reviewed following the selected water management solution.

Implementing these three measures will address the identified issues having caused this event.

Closure

We trust that the above details described appropriately the event that occurred at the Baker Lake Marshaling Facilities on June 7th, 2022 and the remediation activities. Please contact the undersigned should you have any questions.

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